Coral Reef Conservation Program Update

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FKNMS Sanctuary Advisory Council Meeting
Tuesday, April 18, 2017

Outline

1. Coral Program overview
2. Coral Program work supporting FKNMS
3. National Coral Reef Monitoring Program data and products

CRCP Mission and Focus

Mission: *To support effective management and sound science to preserve, sustain, and restore valuable coral reef ecosystems for future generations*

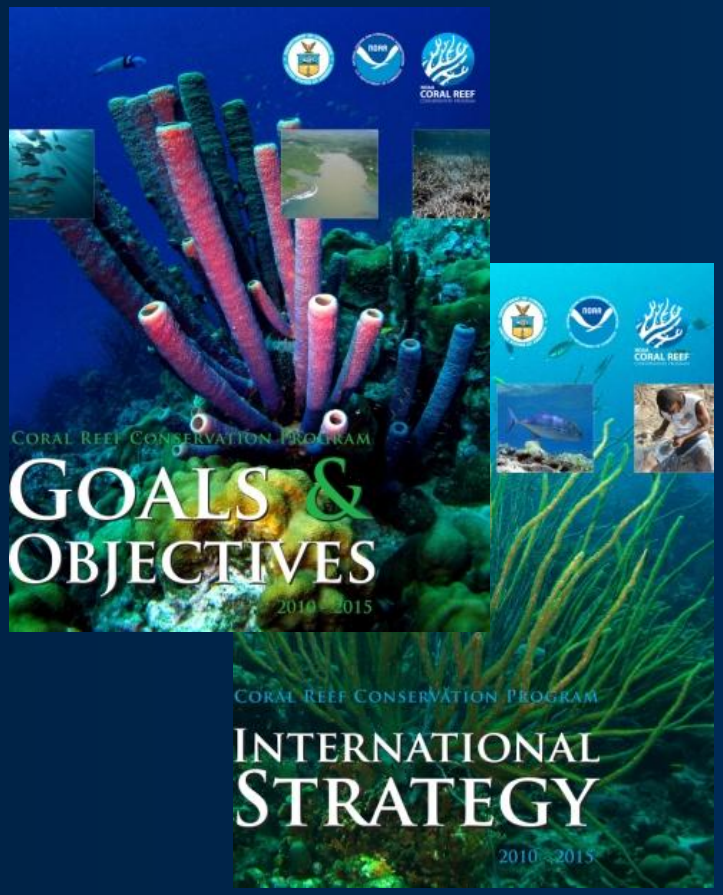
Coral Program Strengths

- X-NOAA Matrix, ecosystem approach
- Threat-based conservation strategy
- Strong federal, state/territorial, local relationships
- NCRMP and site-specific assessment/monitoring

History of CRCP

- Coral Reef Protection Executive Order Established the U.S. Coral Reef Task Force (1998)
- National Action Plan (2000)
- Coral Reef Conservation Act Established the CRCP (2000)
- External Review/Roadmap (2007-2008)
  - 13 to 3
  - Updated/Refined Goals & Objectives
  - Realignment of Grants Program

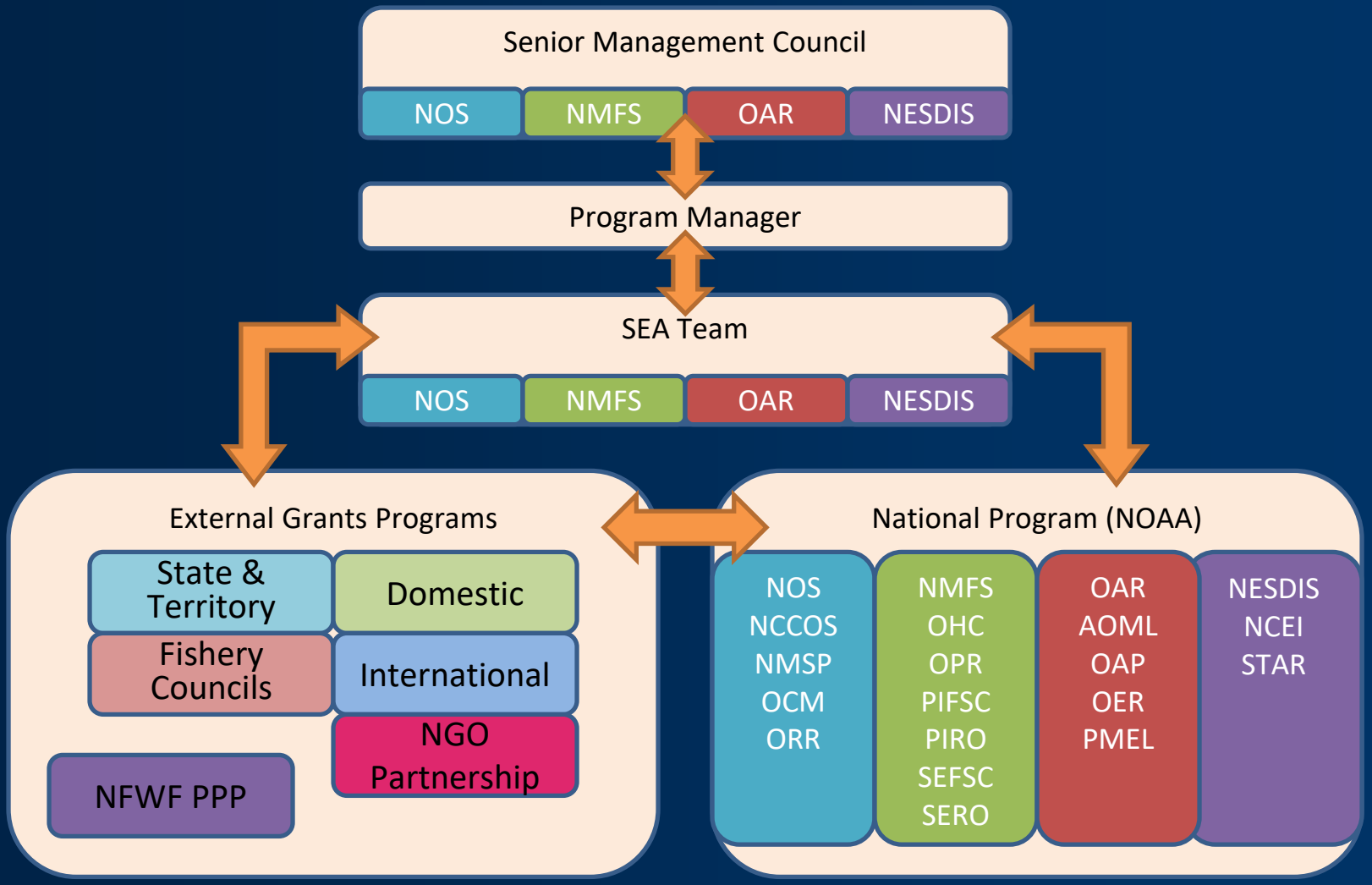
CRCP Goals & Objectives



- 20 year goals; 5 year objectives
  - 2010-2015
- Threat reduction implementation plans completed
- Currently in strategic planning to update Goals & Objectives

Where we work

CRCP Matrix Organization



CRCP Matrix Organization

NOS

NCCOS
-Atlantic Reef Monitoring
-Atlantic Mapping
-Water quality
-Coral Physiology

OCM
-Grants Management
-Management Liaisons
-Socio-Economic Program Coordination
- NCRMP Coordination
- LBSP Coordination
- Climate Coordination
- International Program
- NOAA/USAID IAA

ONMS
-Florida Keys NMS
-Flower Garden Banks NMS
-Fagatele Bay NMS
Paphanoumokuakea MNM
- MPA Center

NMFS

PIFSC
-Pacific Reef Monitoring
-Pacific Reef Climate
-Pacific Mapping
-Socioeconomic Studies

SEFSC
-Atlantic Reef Monitoring
-Coral Biology
-Fisheries Science
-Socioeconomic Studies

PIRO
-Pacific Fishery Liaisons
-Watershed Restoration
-Local Capacity Building

SERO
-Atlantic Fishery Liaisons
-ESA species recovery
-Education & Outreach
- Local Capacity Building

OHC
-Program Coordination
Coral & Watershed Restoration

OAR

AOML
Atlantic Reef Climate
-Water Quality
-Coral Ecology and Fisheries Research

OAP
-Climate and Reef Monitoring

OER
-CRCP HQ Support

PMEL
-Ocean Monitoring

NESDIS

NCEI
-CRCP Data Management
-CRCP HQ Support
- Coral Reef Information System (CoRIS)

STAR
-Coral Reef Watch

Annual Funding: ~$26m

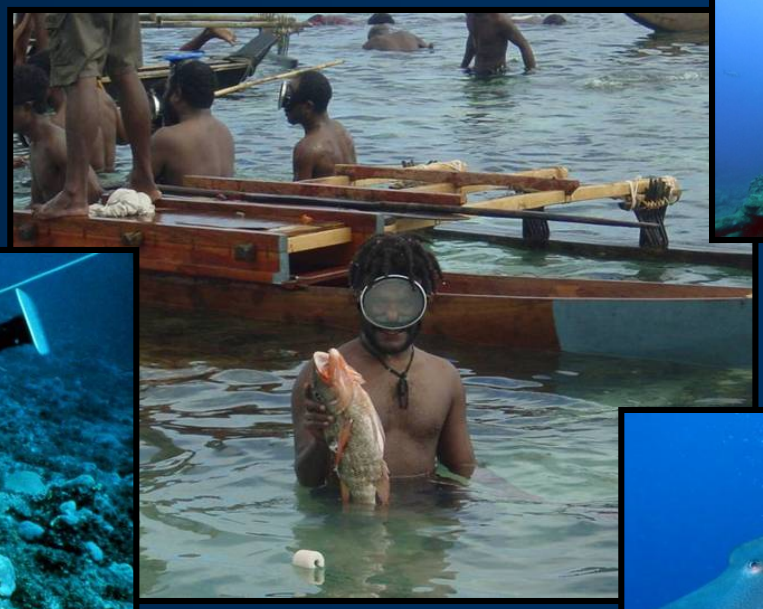
National Program – project funding to NOAA scientists and resource managers to address *CRCP Goals & Objectives*

Coral Reef Conservation Grants Program – 5 competitive grants and cooperative agreement programs

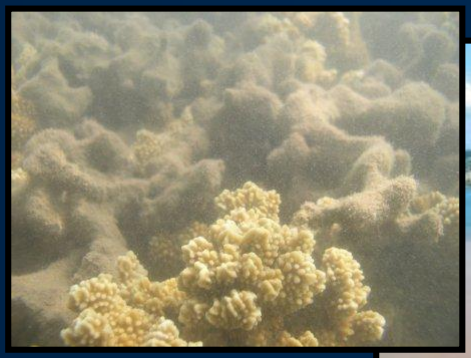
Coral Reef Conservation Fund – competitive grants to build public-private partnerships for coral reef conservation (NOAA & National Fish and Wildlife Foundation)

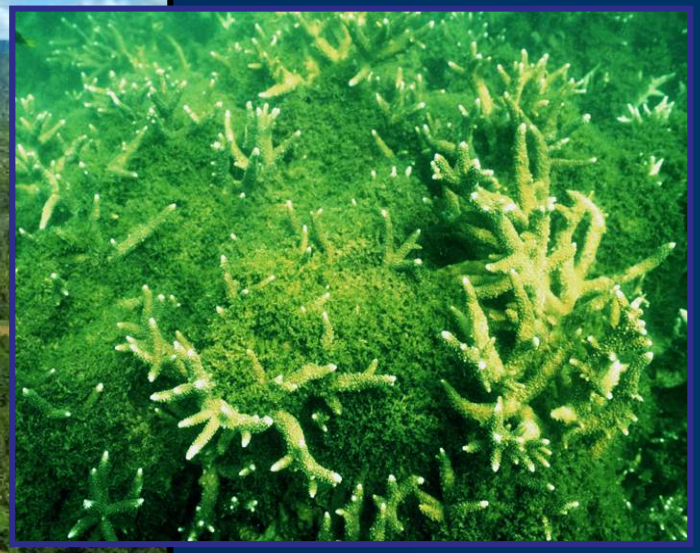
USAID Asia-Pacific Partnership – 5 year, $20m capacity building effort

Priority Threat: Impacts of Fishing

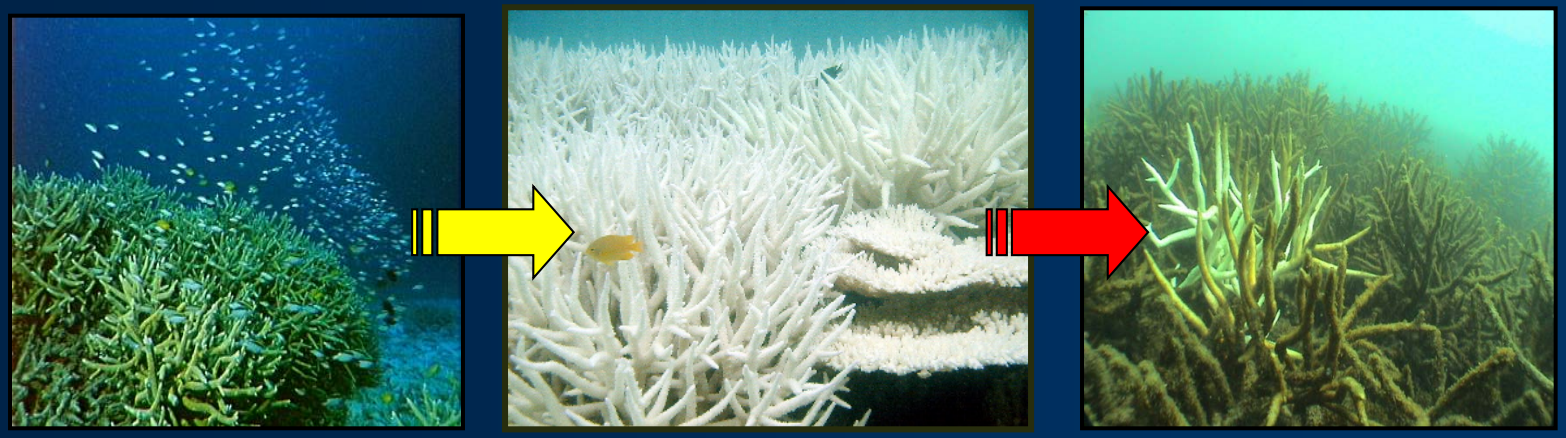


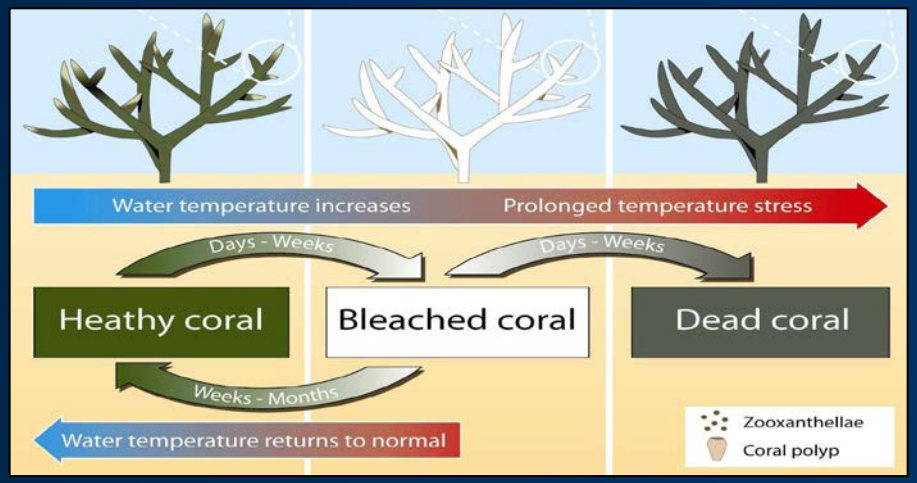
Priority Threat: LBSP





Priority Threat: Climate Change - Bleaching

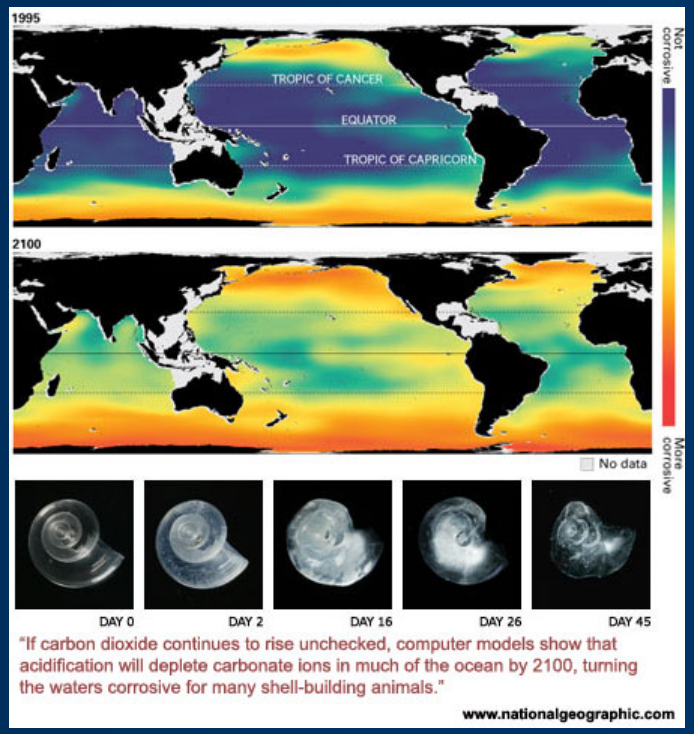




2015: American Samoa before and after: Flower Pot Island in Dec. 2014 & Feb. 2015

Priority Threat: Climate Change - OA

- Absorption of carbon dioxide from the atmosphere leads to pH decline, a process known as "ocean acidification“
- As a result, the growth of reef builders may be severely inhibited
- OA has been called the “osteoporosis of the sea”

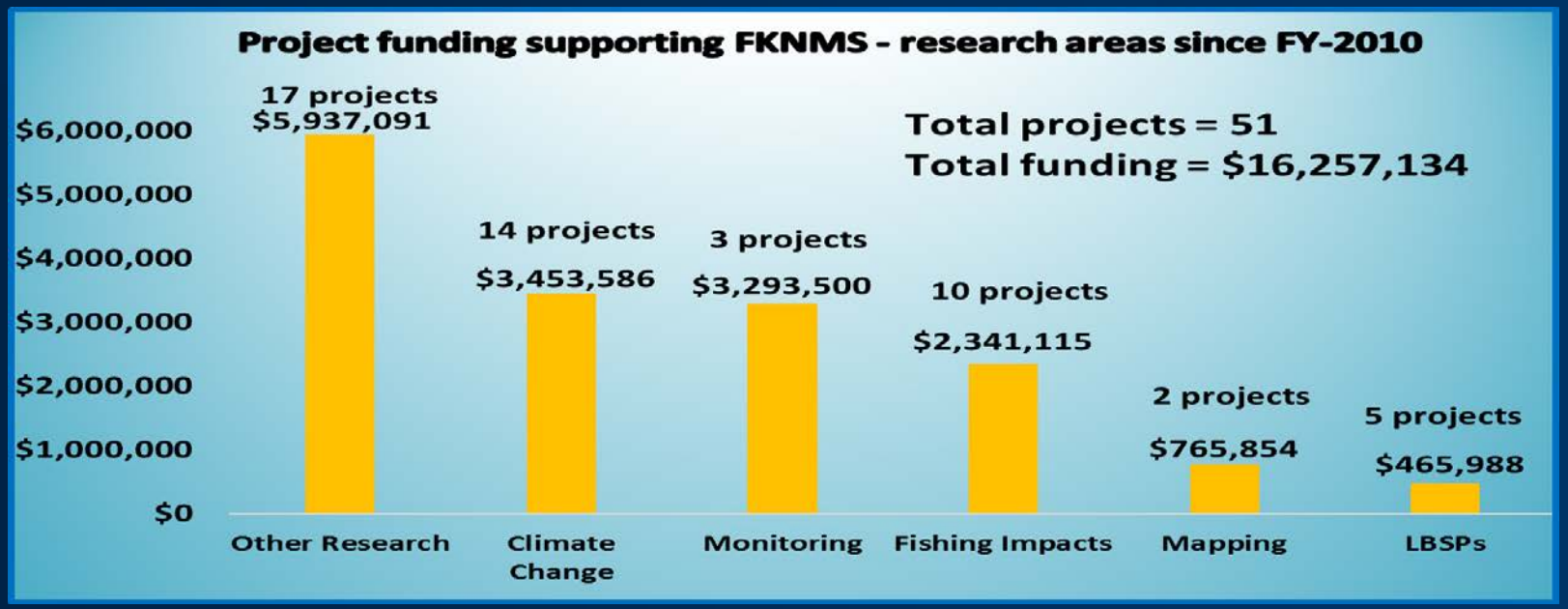


2016 – A Year of Assessment & Evaluation

2016 – A Year of Assessment & Evaluation

1) Internal Assessment of Domestic and International Work
2) Coral/Coastal Manager's Survey
3) Coral Science Evaluation
   - National Coral Reef Monitoring Program
   - Science to support management actions

CRCP work supporting FKNMS

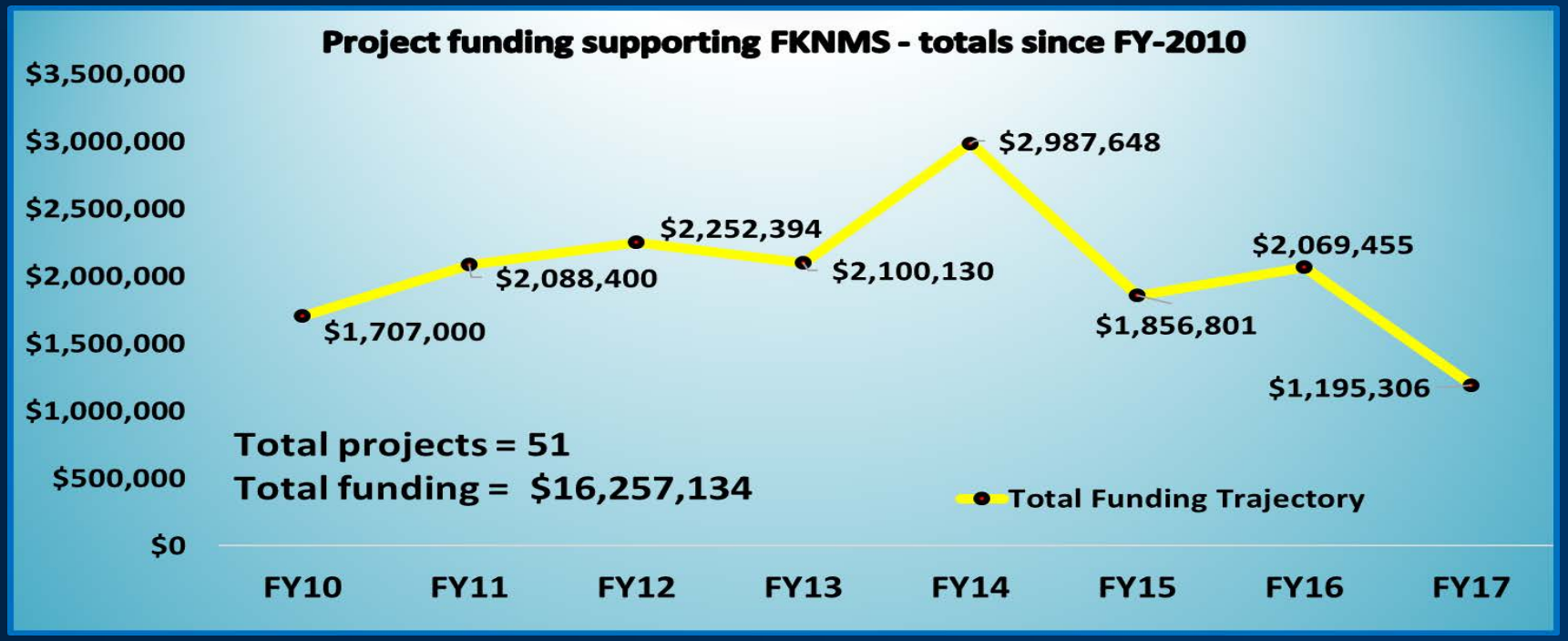


51 projects funded in support of the FKNMS since Fiscal Year 2010

- Other Research includes:
  - ESA coral status
  - Coral reproduction
  - Diseases
  - Restoration projects
  - Management performance
  - Non-indigenous species
  - Wider Caribbean ecosystem science
  - SEFCRI

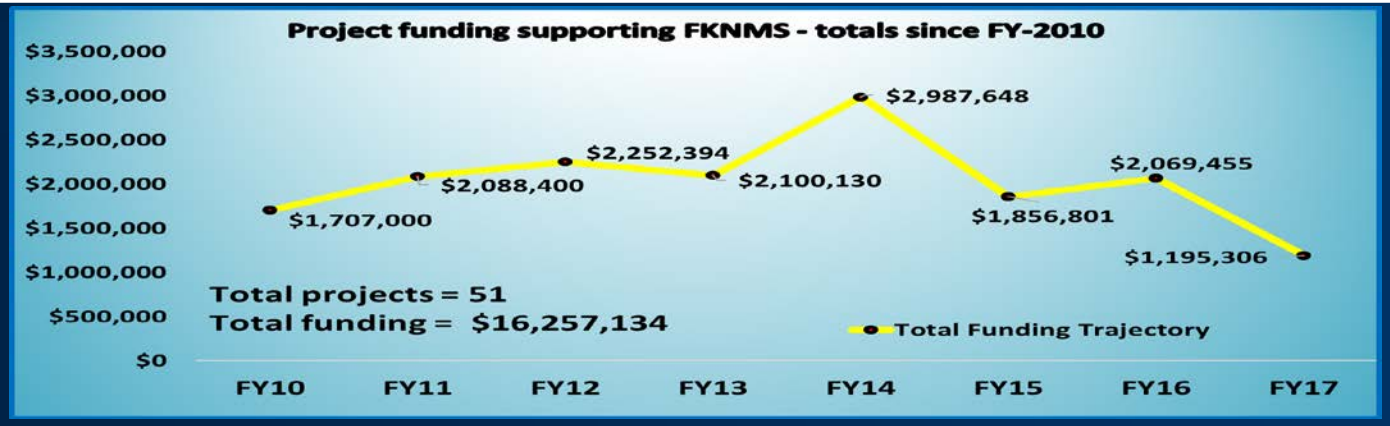
****For a complete list of projects refer to fact sheet****

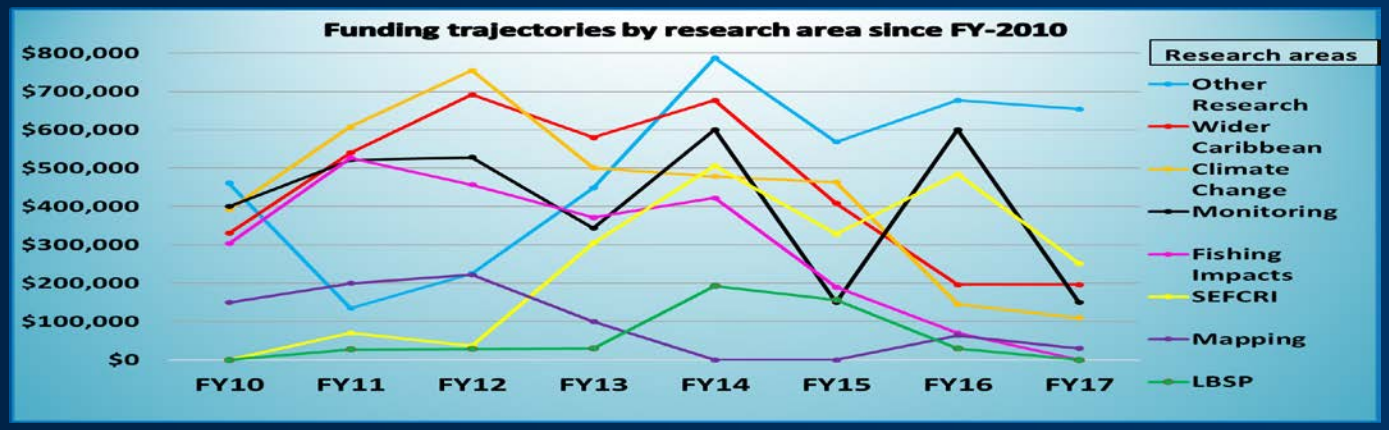
CRCP work supporting FKNMS



Continuous work in support of the FKNMS adding up to $16,257,134 in eight years!

CRCP work supporting FKNMS





- **NCRMP**: Started in FY13 - funded biannually in even years, so FY13,15,17 monitoring funding is reduced.
- **SEFCRI**: With the development of FL Local Action Strategy, CRCP funded more projects in the SEFCRI area.
- **Wider Caribbean**: Projects of great relevance to the FKNMS. Include projects with USVI and Puerto Rico.

National Coral Reef Monitoring Program

- Consolidated CRCP-funded monitoring starting in 2013
- Provides a robust picture of the condition of US coral reef ecosystems and connected communities at an island & regional scale
- Developed consistent and comparable methods
- Unique platform to leverage additional resources for higher resolution data needed to inform ESA, MSA and local management

Goals

1. **Collect scientifically sound, geographically comprehensive data** (biological, climate, and socioeconomic) in the U.S. coral reef areas

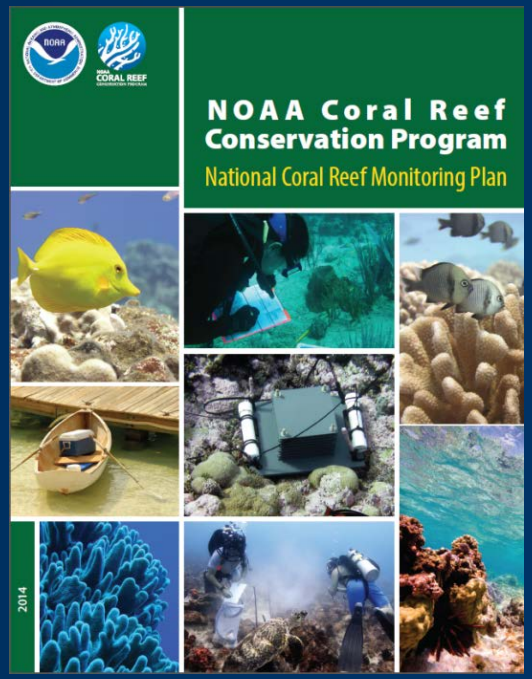
2. **Develop consistent and comparable methods and standard operating protocols**

3. **Deliver data, data products, and tools** to the coral reef conservation community

4. **Provide periodic assessments** of the status and trends of the nation's coral reef ecosystems

5. **Develop and maintain strong partnerships** with federal, state/territory, and academic partners

6. **Provide context** for interpreting localized monitoring



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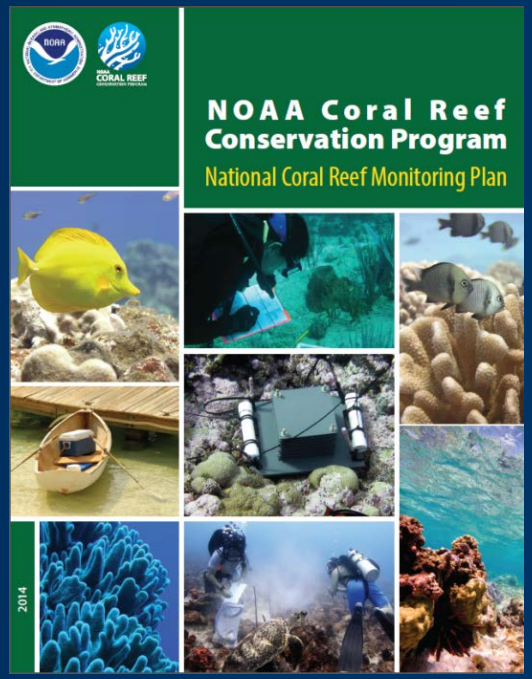
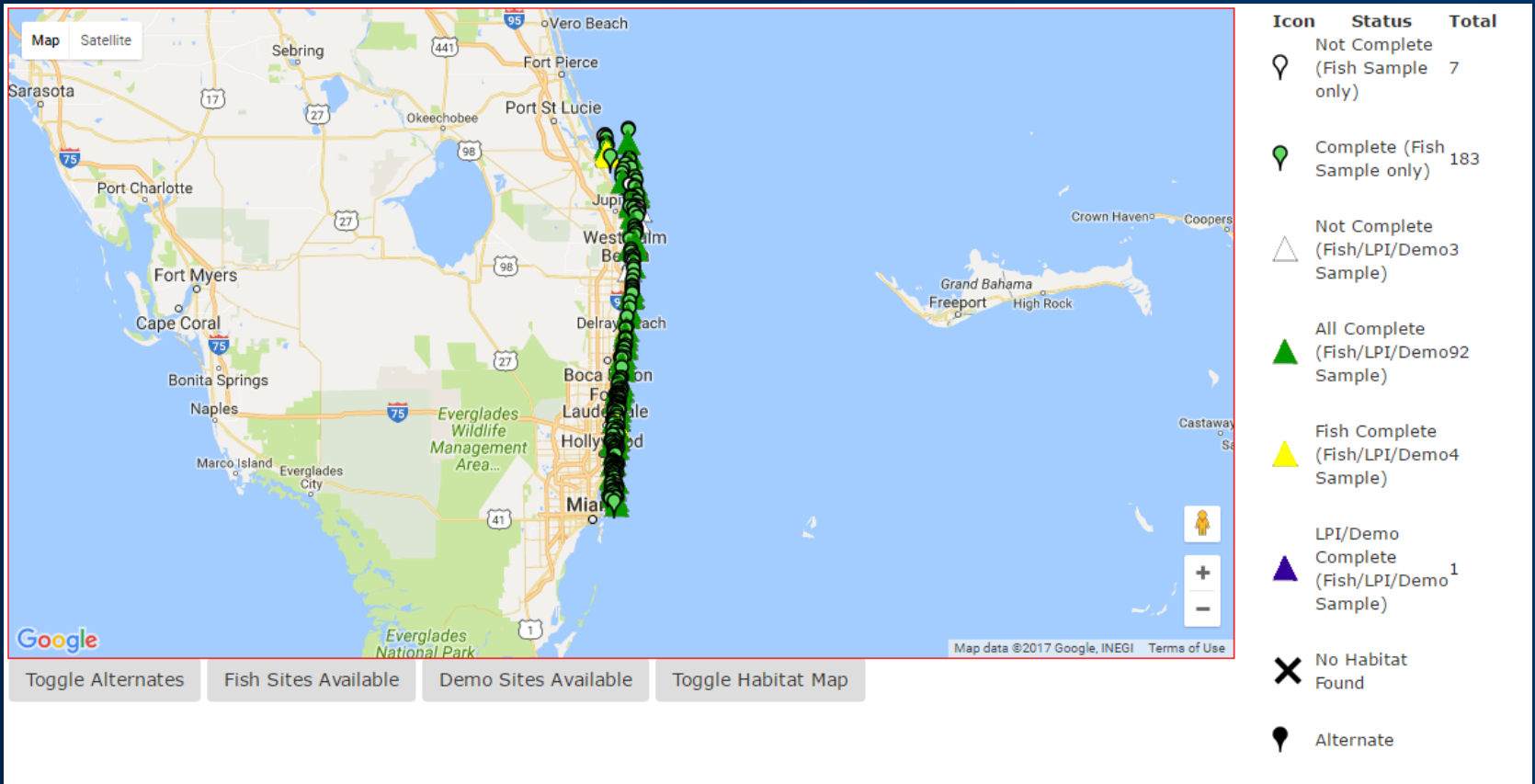


NCRMP Four Monitoring Themes

National Coral Reef Monitoring Program (NCRMP)

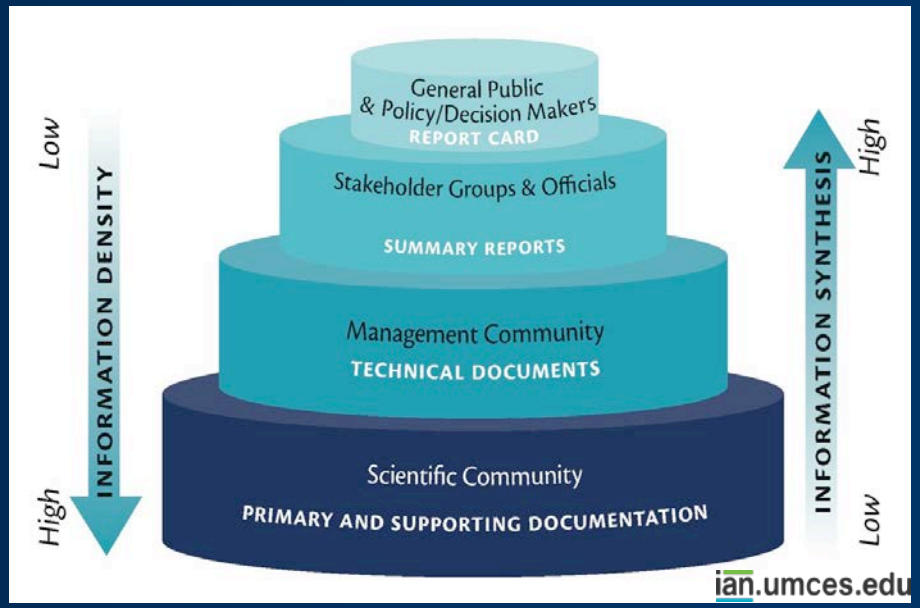
Florida NCRMP & partner sampling in 2016 (even years)



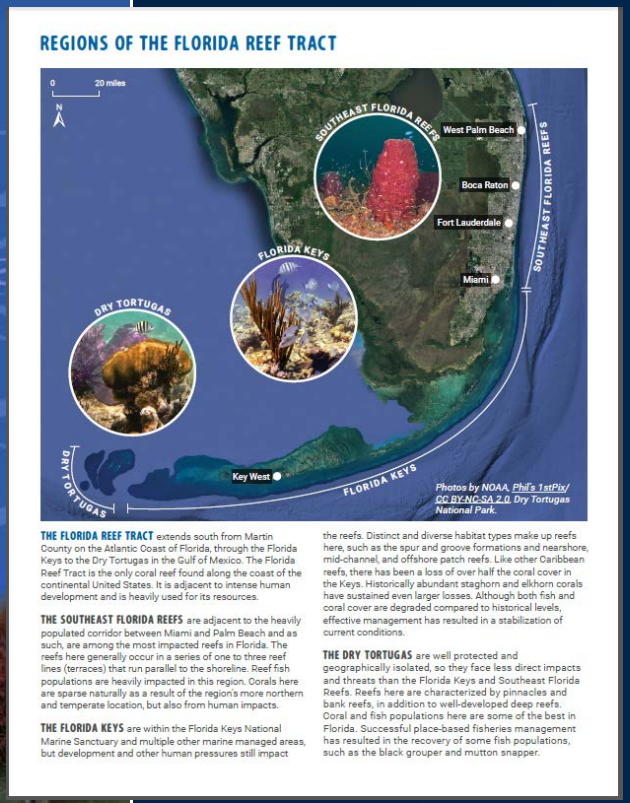
DRTO: 315 (fish), 115 (benthic); FLKEYS: 388 (fish), 122 (benthic); SEFCRI: 279 (fish), 93 (benthic)

Information dissemination

- Top tier = Report card
- 2nd Tier = Summary reports
- 3rd Tier = Technical reports, scientific literature
- Base = Data



New product: Status and trends report cards



REGIONS OF THE FLORIDA REEF TRACT

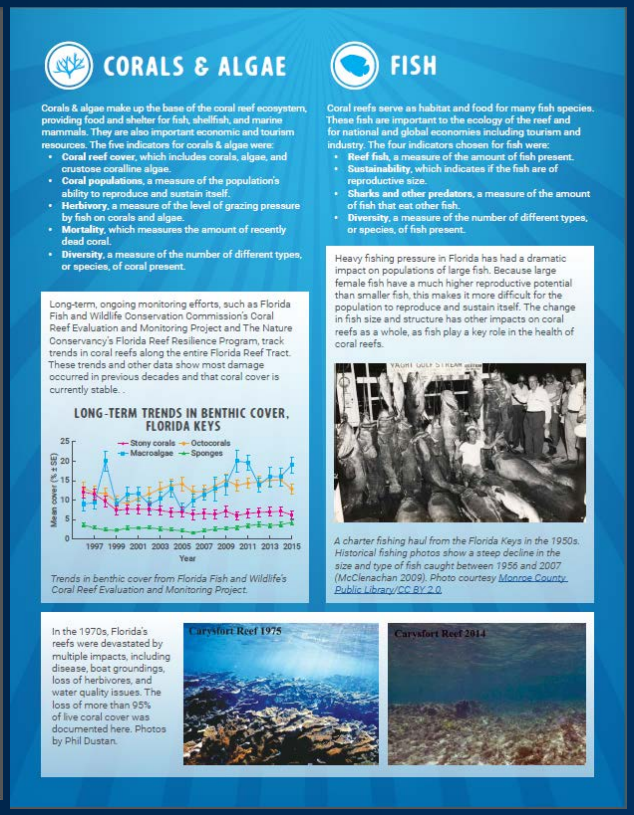
Photos by NOAA. Phil's 1stPix/ CC BY-NC-SA 2.0. Dry Tortugas National Park.

THE FLORIDA REEF TRACT extends south from Martin County on the Atlantic Coast of Florida, through the Florida Keys to the Dry Tortugas in the Gulf of Mexico. The Florida Reef Tract is the only coral reef found along the coast of the continental United States. It is adjacent to intense human development and is heavily used for its resources.

THE SOUTHEAST FLORIDA REEFS are adjacent to the heavily populated corridor between Miami and Palm Beach and as such, are among the most impacted reefs in Florida. The reefs here generally occur in a series of one to three reef lines (terraces) that run parallel to the shoreline. Reef fish populations are heavily impacted in this region. Corals here are sparse naturally as a result of the region's more northern and temperate location, but also from human impacts.

THE FLORIDA KEYS are within the Florida Keys National Marine Sanctuary and multiple other marine managed areas, but development and other human pressures still impact the reefs. Distinct and diverse habitat types make up reefs here, such as the spur and groove formations and nearshore, mid-channel, and offshore patch reefs. Like other Caribbean reefs, there has been a loss of over half the coral cover in the Keys. Historically abundant staghorn and elkhorn corals have sustained even larger losses. Although both fish and coral cover are degraded compared to historical levels, effective management has resulted in a stabilization of current conditions.

THE DRY TORTUGAS are well protected and geographically isolated, so they face less direct impacts and threats than the Florida Keys and Southeast Florida Reefs. Reefs here are characterized by pinnacles and bank reefs, in addition to well-developed deep reefs. Coral and fish populations here are some of the best in Florida. Successful place-based fisheries management has resulted in the recovery of some fish populations, such as the black grouper and mutton snapper.



CORALS & ALGAE

Corals & algae make up the base of the coral reef ecosystem, providing food and shelter for fish, shellfish, and marine mammals. They are also important economic and tourism resources. The five indicators for corals & algae were:

- **Coral reef cover**, which includes corals, algae, and crustose coralline algae.
- **Coral populations**, a measure of the population's ability to reproduce and sustain itself.
- **Herbivory**, a measure of the level of grazing pressure by fish on corals and algae.
- **Mortality**, which measures the amount of recently dead coral.
- **Diversity**, a measure of the number of different types, or species, of coral present.

Long-term, ongoing monitoring efforts, such as Florida Fish and Wildlife Conservation Commission's Coral Reef Evaluation and Monitoring Project and The Nature Conservancy's Florida Reef Resilience Program, track trends in coral reefs along the entire Florida Reef Tract. These trends and other data show most damage occurred in previous decades and that coral cover is currently stable. .

LONG-TERM TRENDS IN BENTHIC COVER, FLORIDA KEYS

Trends in benthic cover from Florida Fish and Wildlife's Coral Reef Evaluation and Monitoring Project.

In the 1970s, Florida's reefs were devastated by multiple impacts, including disease, boat groundings, loss of herbivores, and water quality issues. The loss of more than 95% of live coral cover was documented here. Photos by Phil Dustan.

FISH

Coral reefs serve as habitat and food for many fish species. These fish are important to the ecology of the reef and for national and global economies including tourism and industry. The four indicators chosen for fish were:

- **Reef fish**, a measure of the amount of fish present.
- **Sustainability**, which indicates if the fish are of reproductive size.
- **Sharks and other predators**, a measure of the amount of fish that eat other fish.
- **Diversity**, a measure of the number of different types, or species, of fish present.

Heavy fishing pressure in Florida has had a dramatic impact on populations of large fish. Because large female fish have a much higher reproductive potential than smaller fish, this makes it more difficult for the population to reproduce and sustain itself. The change in fish size and structure has other impacts on coral reefs as a whole, as fish play a key role in the health of coral reefs.

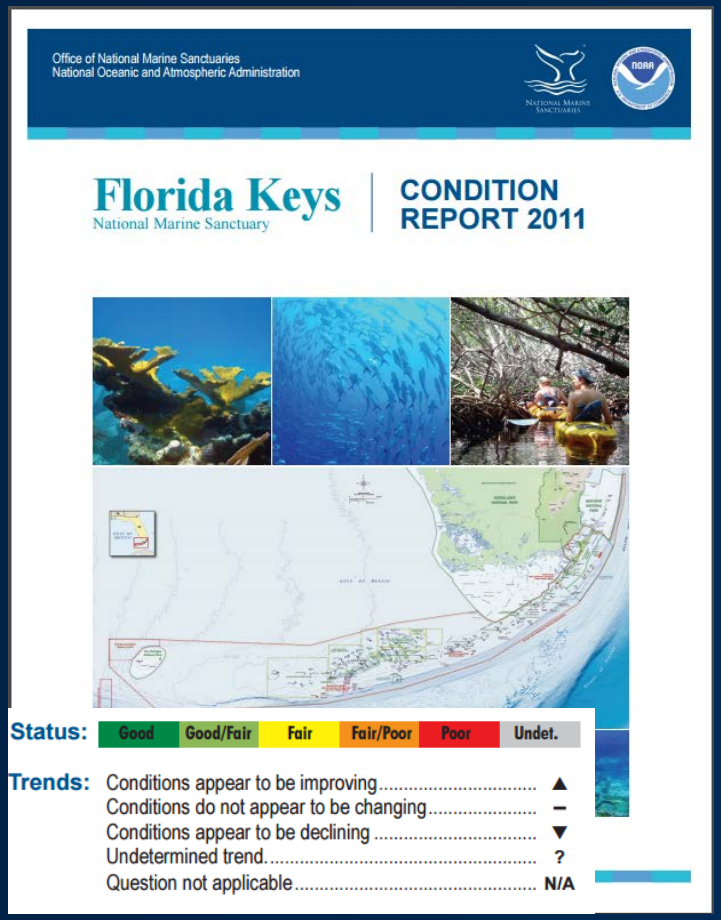
A charter fishing haul from the Florida Keys in the 1950s. Historical fishing photos show a steep decline in the size and type of fish caught between 1956 and 2007 (McClenachan 2009). Photo courtesy Monroe County Public Library/CC BY 2.0.

Indicators:

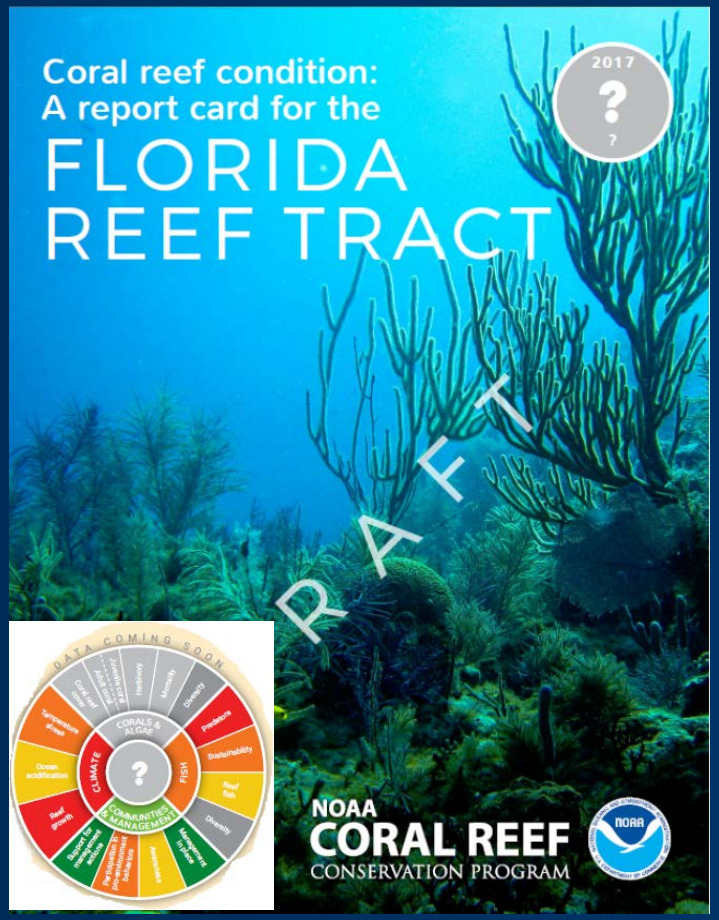
Benthic
Fish
Climate
Socioeconomic

University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE
ian.umces.edu

Condition Reports and Report Cards



Local management level
108 pages



National viewpoint
8 pages

Condition Reports and Report Cards

- Different needs at national vs. local level
- Different products for different audiences
- Same goal
- Opportunity to promote coral reef management in the Keys to a wide audience

Questions?

- We will stick around after the meeting - happy to answer questions or discuss anything in more detail

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